

## California Guidelines

### Subchapter 1. Unfired Pressure Vessel Safety Orders

#### Article 2. Design and Construction

##### §458. Design and Construction of NH(3) Tanks.

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(a) All NH(3) tanks for new installations shall be constructed, inspected, and stamped in compliance with the ASME Code (unless the design, material, and construction of the tank are accepted by the Division as equivalent to the ASME Code and registered with the National Board of Boiler and Pressure Vessel Inspectors. The stamping on all new NH(3) tanks or on nameplates attached thereto shall include the following, in addition to the stamping required by the ASME Code:

- (1) The head and shell thicknesses.
- (2) The gross volumetric capacity in U.S. gallons.
- (3) Total outside surface area of the container in square feet.

(b) The allowable working pressure of any existing NH(3) tank shall be determined by the provisions of the ASME Code effective when the tank was manufactured and upon its condition determined upon inspection. Containers once installed under ground shall not later be reinstalled above ground unless they successfully withstand hydrostatic pressure retests at the pressure specified for the original hydrostatic test as required by the ASME Code under which constructed and show no evidence of serious corrosion.

(c) Any tank used in refrigeration systems or for the refrigerated storage or transportation of NH(3) shall be designed and constructed for an allowable working pressure which takes into consideration the temperature anticipated in the vessel and other appropriate design data.

(d) Except for tanks used in refrigeration systems, any tank used for the unrefrigerated storage, transportation, or utilization of NH(3) shall be designed and constructed in accordance with the ASME Code for an allowable working pressure of at least 265 psig.

(e) All cold formed heads of ferrous material used on NH(3) tanks shall be treated in accordance with paragraph UCS-56 of the ASME Code, regardless of the thickness of the metal when the tanks are to be used for transportation of anhydrous ammonia or for the storage of anhydrous ammonia.

(f) Portable tanks or cylinders of 25 water gallons water capacity or less, that are transported inside service trucks for servicing NH(3) refrigeration Systems, shall be built

either to the ASME Code or to the DOT specifications but must have a stamped pressure of at least 420 psig.

(g) Spot-radiography, partial radiography or 100% radiography shall be required for all vessels except DOT cylinders.

(h) Nonrefrigerated containers, and system nameplates, when required, shall be permanently attached to the system so as to be readily accessible for inspection and shall be marked as specified in the following:

(1) With the name and address of the supplier of the system or the trade name of the system and with the date of fabrication.

(2) With a notation "Anhydrous Ammonia".

(3) With marking indicating the maximum level to which the container may be filled with liquid anhydrous ammonia at temperatures between 20°F. and 130°F. except on containers provided with fixed level indicators, such as fixed length dip tubes, or containers that are filled by weight. Markings shall be in increments of not more than 20°F.

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(i) Marking refrigerated containers except in refrigeration plants where ammonia is used solely as a refrigerant. Each refrigerated container shall be marked with a nameplate on the outer covering in an accessible place as specified in the following:

(1) The maximum allowable water level to which the container may be filled for test purposes.

(2) With the density of the product in pounds per cubic foot for which the container was designed.

(3) With the maximum level to which the container may be filled with liquid anhydrous ammonia.

(4) With a notation "Anhydrous Ammonia".

(j) All NH<sub>3</sub> tanks for new installations with a design pressure of 15 psig or less shall be designed, constructed, inspected and certified in accordance with API Standard 620, 1978 Edition, with the additional requirements listed in Section 455(h)(1) - (8) of these Orders, which will supersede where there is any conflict, or they may be built to the ASME Code.

(k) The shell or head thickness of any container shall not be less than three-sixteenth inch.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**HISTORY:**

1. Amendment filed 12-8-72 as procedural and organizational; effective upon filing (Register 72, No. 50).
2. Amendment filed 3-28-75; effective thirtieth day thereafter (Register 75, No. 13).
3. Amendment of subsection (a) filed 4-1-77; effective thirtieth day thereafter (Register 77, No. 14).
4. Amendment filed 1-5-88; operative 2-4-88 (Register 88, No. 4).
5. Amendment of subsection (e) filed 9-23-88; operative 10-23-88 (Register 88, No. 40).